WHAT IS CLAIMED IS:

1. A scratch drive actuator (SDA) device, comprising:

a drive shoe having a first drive shoe position and a second drive shoe position and configured to urge a shuttle from a first shuttle position towards a second shuttle position; and

an actuator coupled to the drive shoe and configured to expand and contract in response to exposure to thermal energy, wherein the expansion and contraction of the actuator each urge the drive shoe towards one of the first and second drive shoe positions.

2. The SDA device of claim 1 wherein the drive shoe and the actuator are substantially co-planar.

3. The SDA device of claim 1 wherein one of the first and second drive shoe positions is a neutral position.

4. The SDA device of claim 1 wherein at least one of the drive shoe and the actuator has an aspect ratio of at least about 1.5:1.

5. The SDA device of claim 1 wherein the actuator and the drive shoe are integrally formed.

6. The SDA device of claim 1 wherein the actuator comprises a plurality of ribbon-shaped rectilinear members each fixed at both ends.

7. The SDA device of claim 1 wherein the drive shoe comprises a ribbon-shaped member having a bi-arcuate profile.

8. The SDA device of claim 1 wherein the drive shoe comprises a brake shoe configured to restrict motion of the shuttle.

9. A scratch drive actuator (SDA) system, comprising:

a shuttle;

a drive shoe having a first drive shoe position and a second drive shoe position, wherein the drive shoe is biased against the shuttle in at least one of the first and second drive shoe positions; and

an actuator coupled to the drive shoe and configured to expand and contract in response to exposure to thermal energy, wherein the expansion and contraction of the actuator each urge the drive shoe towards a corresponding one of the first and second drive shoe positions, the drive shoe thereby urging the shuttle from a first shuttle position towards a second shuttle position.

10. The SDA system of claim 9 wherein the drive shoe urges the shuttle to rotate from the first shuttle position towards the second shuttle position.

11. The SDA system of claim 9 wherein the drive shoe urges the shuttle to translate from the first shuttle position towards the second shuttle position.

12. The SDA system of claim 9 wherein the expansion of the actuator corresponds to the drive shoe urging the shuttle towards the second shuttle position.

13. The SDA system of claim 9 wherein the contraction of the actuator corresponds to the drive shoe urging the shuttle towards the second shuttle position.

14. The SDA system of claim 9 wherein the drive shoe and the actuator are substantially co-planar.

15. The SDA system of claim 9 wherein the drive shoe engages the shuttle in the absence of the thermal energy.

16. The SDA system of claim 9 wherein the actuator is conductive and the thermal energy results from current flow through the actuator.

17. The SDA system of claim 9 wherein the drive shoe and the actuator are integral to a substrate and the shuttle is discrete from the substrate.

18. A method of manufacturing a scratch drive actuator (SDA) system, comprising:

providing a substrate having an insulating layer and a conductive layer located over the insulating layer;

providing a shuttle over the substrate;

forming a drive shoe from the conductive layer, the drive shoe having a first drive shoe position and a second drive shoe position and configured to urge the shuttle from a first shuttle position towards a second shuttle position;

forming an actuator from the conductive layer, the actuator being coupled to the drive shoe and configured to expand and contract in response to exposure to thermal energy, wherein the expansion and contraction of the actuator each urge the drive shoe towards a corresponding one of the first and second drive shoe positions; and

removing at least a portion of the insulating layer to release at least portions of the drive shoe and the actuator.

19. The method of claim 18 wherein the shuttle is formed from the conductive layer.

20. The method of claim 18 wherein the shuttle is a discrete member assembled into the SDA system.

21. A scratch drive actuator (SDA) system, comprising:

a shuttle;

a plurality of drive shoes each having a first drive shoe position and a second drive shoe position, wherein at least one of the drive shoes is biased against the shuttle when in at least one of the first and second drive shoe positions; and

a plurality of actuators each coupled to a corresponding one of the plurality of drive shoes and each configured to expand and contract in response to exposure to thermal energy, wherein each of the expansion and contraction of each of the plurality of actuators urges the corresponding one of the plurality of drive shoes towards one of the first and second drive shoe

positions, the corresponding one of the plurality of drive shoes thereby urging the shuttle from a first shuttle position towards a second shuttle position.

22. The SDA system of claim 21 wherein at least one of the plurality of actuators is coupled to at least two corresponding ones of the plurality of drive shoes.

23. A scratch drive actuator (SDA) system, comprising:

a shuttle;

a drive shoe coupled to the shuttle and having a first drive shoe position and a second drive shoe position; and

an actuator configured to expand and contract in response to exposure to thermal energy, wherein the drive shoe is biased against the actuator in at least one of the first and second drive shoe positions, and wherein the expansion and contraction of the actuator each urge the drive shoe towards a corresponding one of the first and second drive shoe positions, the drive shoe thereby urging the shuttle from a first shuttle position towards a second shuttle position.